

**In the Specification:**

Please replace the paragraph beginning on page 3, line 13, as follows:

Unlike previous flywheel systems designed for employing five active axes magnetic bearing systems, ~~The devices according to this~~ invention does not use a composite flywheel. Composite material filament wound flywheels can operate at very high tip speeds for storing large amounts of energy per weight. They are constructed in the form of predominantly hoop wound rims. The rim is then typically connected to a central shaft through the use of a hub that is sufficiently flexible to match the large inner diameter strain of the rim. This construction typically results in flexural resonance modes in the flywheel below the maximum normal operating speed. Five active axes magnetic bearing systems are especially well suited to support these flywheels because the electronic control algorithms can be made to change the stiffnesses and damping in the bearings during operation to provide smooth rotation. Unfortunately, this makes the magnetic bearing control much more complex and it is the belief of this inventor that it is inherently less reliable. If the properties of the flywheel or the electronics change and degrade slightly over the continuous operating life, the magnetic bearings would fail to operate properly. The invention overcomes these problems by employing a steel flywheel having a solid center. The flywheel is preferably constructed from alloy steel and is thus capable of operation above 200 m/sec for storing appreciable energy. The solid center construction serves two purposes: it reduces the hoop direction stresses in the flywheel by 50%, and it also provides a flywheel that is rigidly constructed. In a further aspect of the invention, the flywheel preferably has no flexural resonances below the normal operating speed. The magnetic bearing control can therefore be made much simpler and more reliable. Speed independent control can be used to control the magnetic bearings.

Please replace the paragraph beginning on page 9, line 13 with the following paragraph:

A flywheel energy storage device with five active axes magnetic bearing system in accordance with the invention is shown in Fig. 4. The flywheel system 70 is comprised of a solid alloy steel flywheel 71 inside an evacuated chamber 73 within a container 72. A vacuum port 74 can be used for establishing or maintaining the vacuum 73. The flywheel 71 is supported for rotation by an upper active radial magnetic bearing 75, a lower active radial magnetic bearing 76 and an upper active axial magnetic bearing 77. The magnetic bearings 75, 76, 77 are preferably homopolar for allowing the highest efficiency. This reduces any heating that would occur in the vacuum 73 and power requirements by the control electronics, not shown, typically outside the container 72. The magnetic bearings 75, 76, 77 are also preferably use permanent magnet bias. Permanent magnetic bias linearizes and amplifies the forces from the applied control currents. Compared to electromagnetic biased magnetic bearings, permanent magnet bias further reduces power consumption per force generation, produces more linear force to displacement response and also reduces the number of required amplifier to only one per axis. All of these factors significantly reduce the costs and increase both the reliability and longevity of the magnetic bearing system. Such homopolar permanent magnet biased active magnetic bearings can be purchased from Calnetix also known as Innovative Magnetic Technologies.